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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,778	11/17/2003	Daniele Paolo David Piponi	70086.00032	4555

58688 7590 05/23/2008

CONNOLLY BOVE LODGE & HUTZ LLP
P.O. BOX 2207
WILMINGTON, DE 19899

EXAMINER	
LUU, CUONG V	
ART UNIT	**PAPER NUMBER**
2128	
MAIL DATE	**DELIVERY MODE**
05/23/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/715,778	DAVID PIPONI ET AL.	
	Examiner	Art Unit	
	CUONG V. LUU	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 March 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/26/2008 has been entered.

Claims 1-20 are pending. Claim 20 has been added. Claims 1-20 have been examined. Claims 1-20 have been rejected.

Response to Arguments

1. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kunii et al (U.S. Patent 5,625,577) in view of Zordan (Motion capture-driven simulations that hit and react, 2002 ACM 1-58113-573-4/02/0007).

1. As per claim 1, Kunii teaches a method for determining movements of an articulated figure for use in computer-generated animation, the method comprising:

accessing a pose sequence Q(t), wherein Q(t) comprises position values associated with segments of an articulated figure at sequential times of the pose sequence (col. 7 lines 13-19);

calculating an inverse-dynamics solution F(t), wherein F(t) comprises calculated torque values for the segments during sequential forward-looking intervals Δt, such as would result in movements of the articulated figure corresponding to Q(t) (col. 7 lines 23-27);

accessing force data G(t), wherein G(t) comprises external force values for simulating a response of the articulated figure (col. 5 lines 63-65); and

simulating a dynamic response of the articulated figure in reaction to a sum of F(t) and G(t), thereby defining a simulated pose sequence P(t) (col. 9 lines 3-7, col. 7 lines 61-67, col. 8 lines 1-2 and 55-65); and

providing the simulated pose sequence P(t) to a computer for use in animating an articulated figure (col. 10 lines 62-67).

However, Kunii does not teach the force data G(t) being time-varying external force nor summing of F(t) and the time-varying external force G(t) for use in animating.

Zordan teaches these limitations (p. 89 col. 1 section 1 Introduction paragraphs 1-2 and col. 2 first paragraph. These paragraphs teach simulation of humans interacting with each other, in a boxing example, using a collision model. This teaching of collision model indicates time-varying external forces that exert on each other and the summing of F(t) and time-varying external forces for simulate their reactions).

It would have been obvious to one of ordinary skill in the art to combine the teachings of Kunii and Zordan. Zordan' teachings would have presented motion capture-driven simulation that respond to a variety of unexpected impacts in the articulated figure (p. 89 col. 1 section 1 Introduction paragraph 1).

2. As per claim 2, Kunii does not teach setting Δt equal to a user-determinable value, prior to the calculating step. However, it would have been obvious to one of ordinary skill in the art to develop software to be able to set Δt equal to a user-determinable value, prior to the calculating step. The capability to set Δt equal to a user-determinable value would have allowed user to simulate only motion of the interested time interval at a user-defined time resolution.

3. As per claim 3, Kunii teaches scaling F(t) by a scale factor s, whereby the simulating step defines P(t) by a simulated dynamic response of the articulated figure in reaction to a sum of F(t) scaled by s and G(t) (col. 4 lines 4-13 and col. 8 lines 45-62. In these lines Kunii teaches applied force or torque Q_i and modifying or scaling up or down forces exerted on

the body. These teachings suggest the ability of the scaling of F(t) by a factor s since force and torque exerted on a body are interchangeable in these teachings).

4. As per claim 4, Kunii teaches receiving user input defining a value of s, prior to the scaling step (col. 8 lines 45-62).

5. As per claim 5, Kunii teaches scaling F(t) by s, wherein s is less than one (col. 8 lines 57-60. Scaling down is equivalent to a scaling factor less than one).

6. As per claim 6, Kunii teaches the scaling step further comprises scaling F(t) by s, wherein s is greater than one (col. 8 lines 57-60. Scaling up is equivalent to a scaling factor greater than one)

7. As per claim 7, Kunii teaches scaling of torque as discussed in claim 3. It would have been obvious to one of ordinary skill in the art to develop software with capability to scale torque F(t) by s, wherein s comprises a time-dependent function. Scaling torque F(t) by s, wherein s comprises a time-dependent function would have helped design new motion with time-dependent and time-variant torque.

1. As per claim 8, Zordan teaches calculating G(t) using P(t) as input to determine collision events between the articulated figure and other simulated objects, whereby impulse values for G(t) are determined (p. 90 col. 2 section 3 Motion capture-driven control paragraphs 1-2).

8. As per claim 9, Kunii teaches the calculating step and the simulating step are performed concurrently (col. 11 lines 10-15).

9. As per claim 10, Kunii teaches the simulating step is performed after the calculating step has completed by defining F(t) over an animation sequence (col. 8 lines 39-62. These lines teach defining force/torque before the step of simulating motion)

10. As per claim 11, Kunii teaches a computer-readable media encoded with instructions for determining movements of an articulated figure for use in computer-generated animation, the instructions (Kunii's teaching of using a computer to perform these steps below, which have already been discussed in claim 1, inherits a computer-readable media encoded with instructions, is used) comprising:

accessing a pose sequence Q(t), wherein Q(t) comprises position values associated with segments of an articulated figure at sequential times of the pose sequence;

calculating an inverse-dynamics solution F(t), wherein F(t) comprises calculated torque values for the segments during sequential forward-looking intervals Δt, such as would result in movements of the articulated figure corresponding to Q(t);

accessing force data G(t), wherein G(t) comprises external force values for simulating a response of the articulated figure; and

providing a sum of F(t) and G(t) suitable for input in simulating a dynamic response of the articulated figure using a forward-dynamics motion simulation to determine a simulated pose sequence P(t).

However, Kunii does not teach the force data G(t) being time-varying external force nor summing of F(t) and the time-varying external force G(t) for use in animating.

Zordan teaches these limitations (p. 89 col. 1 section 1 Introduction paragraphs 1-2 and col. 2 first paragraph. These paragraphs teach simulation of humans interacting with each other, in a boxing example, using a collision model. This teaching of collision model indicates time-varying external forces that exert on each other and the summing of F(t) and time-varying external forces for simulate their reactions).

It would have been obvious to one of ordinary skill in the art to combine the teachings of Kunii and Zordan. Zordan' teachings would have presented motion capture-driven simulation that respond to a variety of unexpected impacts in the articulated figure (p. 89 col. 1 section 1 Introduction paragraph 1).

11. As per claim 12, these limitations have already been discussed in claim 2. They are, therefore, rejected for the same reasons.

12. As per claim 13, these limitations have already been discussed in claim 3. They are, therefore, rejected for the same reasons.

13. As per claim 14, these limitations have already been discussed in claim 4. They are, therefore, rejected for the same reasons.

14. As per claim 15, these limitations have already been discussed in claim 5. They are, therefore, rejected for the same reasons.

2. As per claim 16, these limitations have already been discussed in claim 6. They are, therefore, rejected for the same reasons.

15. As per claim 17, these limitations have already been discussed in claim 7. They are, therefore, rejected for the same reasons.

16. As per claim 18, these limitations have already been discussed in claim 8. They are, therefore, rejected for the same reasons.

17. As per claim 19, these limitations have already been discussed in claim 10. They are, therefore, rejected for the same reasons.

18. As per claim 20, these limitations have already been discussed in claim 9. They are, therefore, rejected for the same reasons.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cuong V. Luu whose telephone number is 571-272-8572. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah, can be reached on 571-272-2279. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. An inquiry of a general nature or relating to the status of this application should be directed to the TC2100 Group receptionist: 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Kamini S Shah/

Supervisory Patent Examiner, Art Unit 2128

/Cuong V Luu/

Examiner, Art Unit 2128